

Appl. No. 10/089,112
Amd. Dated June 22, 2005
Reply to Office Action of April 22, 2005

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (canceled)

Claim 2 (previously presented): An add/drop node to be connected in an optical WDM-network, the network including two optical fiber paths for letting light of a plurality of channels propagate in opposite directions in the network, characterized by two add/drop modules for each of the channels, each add/drop module comprising an add device for adding light to a first one of the two optical fiber paths and a drop device for deflecting a portion of light from a second one of the two optical fiber paths different from the first one and all add/drop modules having the same construction, and in that the add/drop modules are arranged in two sets, the add/drop modules of a first one of the two sets having their add devices connected in the first one of the two optical fiber paths and their drop devices connected in the second one of the two optical fiber paths and the add/drop modules of a second one of the two sets different from the first one having their add devices connected in the second one of the two optical fiber paths and their drop devices connected in the first one of the two optical fiber paths.

Claim 3 (original): An add/drop node according to claim 2, characterized in that in each of the two sets the add/drop modules are placed at the sides of each other, and that for two adjacent add/drop modules an output of the add device in a first one of the two adjacent add/drop modules is connected to an input of the add device in a second one of the two adjacent add/drop modules.

Claim 4 (original): An add/drop node according to claim 2, characterized in that in each of the two sets the add/drop modules are placed at the sides of each other, and that for two adjacent add/drop modules an output of the drop device in a first one of the two adjacent add/drop modules is connected to an input of the drop device in a second one of the two adjacent add/drop modules.

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Claim 5 (previously presented): An add/drop node according to claim 2, characterized in that in each of the two sets the add/drop modules are placed at the sides of each other to form inner add/drop modules and two end add/drop modules in each set, the end add/drop modules having an add/drop module of the set on only one side, and that for one of the two end add/drop modules of a first one of the two sets its drop device has an output connected to an input of the add device of one of the two end add/drop modules in a second one of the two sets and that for said one of the two end add/drop modules of the second one of the two sets its drop device has an output connected to an input of the add device of said one of the two end add/drop modules in the first one of the two sets.

Claim 6 (currently amended): An add/drop node according to claim 2, characterized in that each add/drop module comprises a housing enclosing the add device and the drop device of the add/drop module, a first fixed connector attached to the ~~house~~ housing for connection in the first one of the two optical fiber paths and a first optical fiber extending freely from the housing and having a first free connector at its free end to be attached to the fixed connector of a neighboring add/drop module for continuing the first path through the considered add/drop module to the neighboring module, and a second fixed connector attached to the housing for connection in the second one of the two optical fiber paths and a second optical fiber extending freely from the housing and having a second free connector at its free end to be attached to the fixed second connector of a neighboring add/drop module for continuing the second path through the considered add/drop module to the neighboring module.

Claim 7 (original): An add/drop node according to claim 6, characterized in that the house includes two winding cores around which excessive fiber lengths connecting devices and connectors of the add/drop module can be wound.

Claim 8 (canceled)

Claim 9 (previously presented): An add/drop node according to claim 3, characterized in that in each of the two sets the add/drop modules are placed at the sides of each other to form inner add/drop modules and two end add/drop modules in each set, the end add/drop modules having an add/drop module of the set on only one side, and that for one of the two end add/drop modules of a first one of the two sets its drop device has an output connected to an input of the add device of one

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of the two end add/drop modules in a second one of the two sets and that for said one of the two end add/drop modules of the second one of the two sets its drop device has an output connected to an input of the add device of said one of the two end add/drop modules in the first one of the two sets.

Claim 10 (previously presented): An add/drop node according to claim 4, characterized in that in each of the two sets the add/drop modules are placed at the sides of each other to form inner add/drop modules and two end add/drop modules in each set, the end add/drop modules having an add/drop module of the set on only one side, and that for one of the two end add/drop modules of a first one of the two sets its drop device has an output connected to an input of the add device of one of the two end add/drop modules in a second one of the two sets and that for said one of the two end add/drop modules of the second one of the two sets its drop device has an output connected to an input of the add device of said one of the two end add/drop modules in the first one of the two sets.

Claim 11 (canceled)

Claim 12 (previously presented): An add/drop node according to claim 3, characterized in that each add/drop module comprises a housing enclosing the add device and the drop device of the add/drop module, a first fixed connector attached to the housing for connection in the first one of the two optical fiber paths and a first optical fiber extending freely from the housing and having a first free connector at its free end to be attached to the fixed connector of a neighboring add/drop module for continuing the first path through the considered add/drop module to the neighboring module, and a second fixed connector attached to the housing for connection in the second one of the two optical fiber paths and a second optical fiber extending freely from the housing and having a second free connector at its free end to be attached to the fixed second connector of a neighboring add/drop module for continuing the second path through the considered add/drop module to the neighboring module.

Claim 13 (previously presented): An add/drop node according to claim 4, characterized in that each add/drop module comprises a housing enclosing the add device and the drop device of the add/drop module, a first fixed connector attached to the housing for connection in the first one of the two optical fiber paths and a first optical fiber extending freely from the housing and having a first free connector at its free end to be attached to the fixed connector of a neighboring add/drop module

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for containing the first path through the considered add/drop module to the neighboring module, and a second fixed connector attached to the housing for connection in the second one of the two optical fiber paths and a second optical fiber extending freely from the housing and having a second free connector at its free end to be attached to the fixed second connector of a neighboring add/drop module for continuing the second path through the considered add/drop module to the neighboring module.

Claim 14 (previously presented): An add/drop node according to claim 5, characterized in that each add/drop module comprises a housing enclosing the add device and the drop device of the add/drop module, a first fixed connector attached to the housing for connection in the first one of the two optical fiber paths and a first optical fiber extending freely from the housing and having a first free connector at its free end to be attached to the fixed connector of a neighboring add/drop module for continuing the first path through the considered add/drop module to the neighboring module, and a second fixed connector attached to the housing for connection in the second one of the two optical fiber paths and a second optical fiber extending freely from the housing and having a second free connector at its free end to be attached to the fixed second connector of a neighboring add/drop module for continuing the second path through the considered add/drop module to the neighboring module.

Claim 15 (previously presented): An add/drop node used in an optical network having two fiber paths for carrying light corresponding to a plurality of channels in opposite directions, comprising:

a pair of add/drop modules corresponding to one of the plurality of channels, each of the add/drop modules comprising,

- an add device configured to add light to a first one of the fiber paths;
- a drop device configured to deflect a portion of the light from a second one of the fiber paths;
- a housing enclosing the add device and the drop device;
- a first fixed connector attached to the housing to connect to one fiber path; and
- a first optical fiber extending from the housing and coupling to a first free connector at one end, the first free connector connecting to a neighboring add/drop module;

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a second fixed connector attached to the housing to connect to the other fiber path; and
a second optical fiber extending from the housing and coupling to a second free connector at one end, the second free connector connecting to the neighboring add/drop module;
wherein the pair of add/drop modules have identical construction and said first and second fiber paths carry light in opposite directions.

Claim 16 (canceled)

Claim 17 (previously presented): The node according to claim 15, wherein the housing includes two winding cores around which excessive fiber lengths that connect devices and connectors of each of the add/drop modules can be wound.

Claim 18 (previously presented): The node according to claim 15, wherein the housings of the add/drop modules are configured to be inserted into a rack.

Claim 19 (previously presented): The node according to claim 15, further comprising:
a monitor module coupled to one of the add/drop modules and to the fiber paths, the monitor module including an add coupler configured to add a control signal and a tap configured to extract a portion of light.

Claim 20 (previously presented): The node to claim 19, wherein the monitor module has a housing that is identical to housing of the add/drop modules.

Claim 21 (previously presented): The node according to claim 15, further comprising:
an optical client portion configured to interface with a client station to receive and transmit optical signals.

Claim 22 (previously presented): An optical communication system comprising:
a plurality of fiber paths that carry optical signals corresponding to a plurality of channels in opposite directions; and
a plurality of add/drop nodes coupled to the fiber paths, each of the add/drop nodes comprising,

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a pair of add/drop modules corresponding to one of the plurality of channels, each of the add/drop modules comprising,

- an add device configured to add light to one of the fiber paths;
- a drop device configured to deflect a portion of the light from another one of the fibers paths;
- a housing enclosing the add device and the drop device;
- a first fixed connector attached to the housing to connect to one fiber path; and
- a first optical fiber extending from the housing and coupling to a first free connector at one end, the first free connector connecting to a neighboring add/drop module;
- a second fixed connector attached to the housing to connect to the other fiber path; and
- a second optical fiber extending from the housing and coupling to a second free connector at one end, the second free connector connecting to the neighboring add/drop module.

Claim 23 (canceled)

Claim 24 (previously presented): The system according to claim 22, wherein the housing includes two winding cores around which excessive fiber lengths that connect devices and connectors of each of the add/drop modules can be wound.

Claim 25 (previously presented): The system according to claim 22, wherein the housings of the add/drop modules are configured to be inserted into a rack.

Claim 26 (previously presented): The system according to claim 22, wherein each of the add/drop nodes further comprises:

a monitor module coupled to one of the add/drop modules and to the fiber paths, the monitor module including an add coupler configured to add a control signal and a tap configured to extract a portion of light.

Claim 27 (previously presented): The system according to claim 26, wherein the monitor module has a housing that is identical to housings of the add/drop modules.

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Claim 28 (previously presented): The system according to claim 22, further comprising a client station coupled to one of the add/drop nodes, wherein the one add/drop node further comprises:
an optical client portion configured to interface with the client station to receive and transmit optical signals.

Claim 29 (previously presented): An add/drop node used in an optical network having two fiber paths for carrying light corresponding to a plurality of channels in opposite directions, comprising:

a pair of add/drop modules corresponding to one of the plurality of channels, each of the add/drop modules comprising,
means for adding light to one of the fiber paths;
means for deflecting a portion of the light from another one of the fibers paths,
wherein the pair of add/drop modules have identical construction;
a housing enclosing the means for adding and the means for deflecting;
a first fixed connector attached to the housing to connect to one fiber path; and
a first optical fiber extending from the housing and coupling to a first free connector at one end, the first free connector connecting to a neighboring add/drop module;
a second fixed connector attached to the housing to connect to the other fiber path; and
a second optical fiber extending from the housing and coupling to a second free connector at one end, the second free connector connecting to the neighboring add/drop module.

Claim 30 (cancelled)

Claim 31 (previously presented): The node according to claim 29, wherein the housing includes two winding cores around which excessive fiber lengths that connect means for adding, means for deflecting and connectors of each of the add/drop modules can be wound.

Claim 32 (previously presented): The node according to claim 29, wherein the housings of the add/drop modules are configured to be inserted into a rack.

Claim 33 (previously presented): The node according to claim 29, further comprising:

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a monitoring means coupled to one of the add/drop modules and to the fiber paths for adding a control signal and for extracting a portion of light.

Claim 34 (previously presented): The node according to claim 33, wherein the monitoring means is enclosed in a housing that is identical to housings of the add/drop modules.

Claim 35 (previously presented): The node according to claim 29, further comprising:
means for interfacing with a client station to receive and transmit optical signals.